

DETAILED ACTION

1. In view of the appeal brief filed on 10/07/2009, PROSECUTION IS HEREBY REOPENED. A new grounds of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Jared J. Fureman/

Supervisory Patent Examiner, Art Unit 2836.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada et al. (US 6,275,368).

3. Regarding claims 1 and 7, Yamada et al. in (Figs. 1 and 4-5), discloses a method for controlling a solenoid valve (16, 18), particularly in a motor vehicle, in a case of which a first voltage (i.e. the exciting voltage VP, VP1) is applied to a coil of the solenoid valve (16, 18) until a first point in time (i.e. T1, which starts to move the solenoid valve body to the connection position 16f), then a second voltage (VP2) with a smaller effective value is applied (i.e. having a smaller duty ratio cycle than the first duty ratio cycle of the first exciting voltage of 100%), wherein the first point in time precedes a point in time at which the solenoid valve (16, 18) reaches a final position (i.e. when the solenoid valve body reaches it's holding position), and wherein the smaller effective value of the second voltage (VP2) is realized by pulse-width modulating (26, 31, 32, 39) the first voltage (VP1). See col. 4, ll. 26 thru col.5, ll. 1-15 and col. 6, ll. 17-41 and col. 6, ll. 64 and col. 9, ll. 19-27.

4. Regarding claim 2, Yamada et al. in (Figs. 1 and 4-5), discloses the method as recited in claim 1, wherein the second voltage (VP2) is at least so great that the final position (i.e. holding position) of the solenoid valve (16, 18) is reached. See col. 6, ll. 17-41 and col. 6, ll. 64.

5. Regarding claim 7, Yamada et al. discloses the device as recited in claim 7, wherein the points in time and the electrical voltages are inherently stored in a program map as a function of operating variables (col. 5, ll. thru col. 6, ll. 1-60).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US 6,275, 368) in view Coates et al. (US 6,807,947). 15.

7. Regarding claim 9, Yamada et al. discloses the method of controlling a solenoid valve, expect for storing a computer program product with program code that is stored on a machine-readable storage device for carrying out the method as recited in Claim 1 when the program is run on a computer.

Coates et al discloses a method for controlling fuel/or pressure in an internal combustion engine comprising a computer program in the form of a computer program product having a program code for executing all steps of the method (col. 2, ll. 20-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Coates et al. in the solenoid valve device as taught by Yamada et al. so that the method according to claim is executable when the medium is integrated in a controller/computer for an internal combustion engine of a motor vehicle.

Allowable Subject Matter

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8. Claim 3 is objected to as being dependent upon a rejected base claim, 1 but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: Combined claim 3 would be allowable over the prior art of record because the prior art failed to teach or suggest wherein a current continues to climb while the second voltage is being applied as set forth in the claimed invention.

10. Claim 4 is objected to as being dependent upon a rejected base claim 1, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: Combined claim 4 would be allowable over the prior art of record because the prior art failed to teach or suggest wherein starting at a point in time, a third voltage is applied to the coil of the solenoid valve, an effective value of which is essentially equal to or less than the effective value of the second voltage and which does not allow the current to increase further as compared with the second voltage as set forth in the claimed invention.

12. Claim 5 is objected to as being dependent upon a rejected base claim 1, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter: Combined claim 5 would be allowable over the prior art of record because the

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prior art failed to teach or suggest wherein starting at a third point in time, a fourth voltage is applied to the coil of the solenoid valve, an effective value of which is essentially less than the effective value of the third voltage such that a lesser current flows after time, the less current being at least so great that a minimum holding force of a fuel supply control valve is ensured as set forth in the claimed invention.

14. Claim 6 is objected to as being allowable subject matter because the claim is dependent upon claim 5.

Response to Arguments

15. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Guo (US 7,315,440) discloses a circuit and method for driving a coil-armature device with modulating the voltage levels through pulse width modulating (abstract). Lignar (US 5,422,780) discloses a solenoid drive circuit comprising a timer circuit which controls different voltage levels applied to a solenoid device (abstract, Figs. 4b and 5B). Teggatz et al. (US 2005/0117265) discloses a current control via a variable voltage for a solenoid (abstract, Figs. 3 and 4a-4c).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to TERRENCE R. WILLOUGHBY whose telephone number is (571)272-2725. The examiner can normally be reached on 9-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jared Fureman can be reached on 571-272-2391. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Terrence R Willoughby/
Examiner, Art Unit 2836

/Jared J. Fureman/
Supervisory Patent Examiner, Art
Unit 2836

4/24/10